

REMARKS/ARGUMENTS

Favorable reconsideration of the present application is respectfully requested.

Claim 2 has been canceled and the subject matter thereof has been incorporated into Claim 1. Allowable Claims 4 and 9 have been rewritten in independent form. New Claim 15 is based upon Claim 3 rewritten in independent form.

The claims have been revised in light of the rejection under 35 U.S.C. § 112. Applicants wish to thank Examiner Morgan for the courtesy of an interview on April 20, 2005. Based upon the results of this interview, it is Applicants' understanding that the amended claims overcome the rejection under 35 U.S.C. § 112. No agreement as to patentability was reached, pending the Examiner's further review of the prior art and the claims, but the examiner indicated that the outstanding rejections would not be maintained.

Briefly, according to a feature of the invention a coolant collecting vent in a cylindrical grinding machine extends to a location directly under a machining area where a grinding wheel comes into contact with the workpiece. This is shown, for example, in Figures 1 and 2 wherein the coolant collecting vent 10A is located directly under the machining area where the grinding wheel G comes into contact with the workpiece W. This is beneficial for permitting the coolant to fall directly into the coolant collecting vent without being retained on the bed. However, it creates the problem wherein the structure directly under the machining area comprises a vent which cannot readily support certain tools and workpieces.

U.S. patent 5,439,431 (Hessbruggen et al) discloses a CNC machining center in which a vertical coolant collecting vent extends directly under a working area 34 (Figures 8-10). In this case the tool (chisel 51 or drill 52) and the drive motor 53 of a tool carrier 50 are mounted within the vertical cooling vent itself. A more difficult problem arises where the workpiece must be held at its ends for rotation about an axis, and the tool is a grinding wheel

which must be supported for movement in directions parallel and transverse to the axis of rotation of a workpiece.

According to a feature of the invention, this problem is addressed by providing that the wheel head for the grinding wheel comprises a slide base guided at both ends on the bed, with a mid portion of the slide base straddling over at least a part of the coolant collecting vent. This is shown in Figure 1 wherein the slide base 31 is mounted on the bed 10 via the guide rails 33, with the grinding wheel bearing mechanism 50 straddling the coolant collecting vent 10A.

Claim 1 now includes the subject matter of Claim 2, wherein the wheel head unit is defined as comprising a slide base guided at both ends on the bed, with a mid portion of the slide base straddling over at least a part of the coolant collecting vent. Claim 8 had recited the same feature. Claims 2 and 8 had been rejected under 35 U.S.C. § 103 as being obvious over Hessbruggen et al in view of U.S. patent 5,414,963 (Watanabe et al). The Examiner had there recognized that Hessbruggen et al fails to disclose a workpiece supported for rotation, but alleged that this would have been obvious in Hessbruggen et al in view of Watanabe et al. However, it is respectfully submitted that Claims 1 and 8 define over any combination of the above references.

Watanabe et al is directed to a belt grinding machine wherein a workpiece in the form of a belt P is mounted on rollers 11 and 14, and is ground by a grinding wheel 21 mounted on a schematically illustrated grinding block 24. A coolant tank 41 is positioned under the grinding wheel. However, there is no description in the reference that the movable block 24a which supports the grinding wheel 21 includes a slide base guided at both ends on a bed, and including a mid portion straddling a part of a coolant collecting vent. The dashed lines schematically showing the movable block 24a in Figure 1A do not inherently teach these

features since they can correspond to structure provided at only one side of the tank 41.

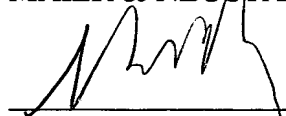
Claims 1 and 8 are therefore believed to clearly define over this reference.

Claim 3 depends from Claim 1. Additionally, Claim 15 recites the features of Claim 3, but without the subject matter of intervening Claim 2. In each case, the claims further recite that the workpiece support device comprises first and second support heads which are spaced in the first horizontal direction parallel to the workpiece axis and mounted on the upright support portion of the support table, wherein lower portions of the support heads are not secured to the support table. This is shown, for example, in the figures wherein the work head 13 and the foot stock 14 are spaced in a horizontal direction and are mounted to the upright portion 12 of the support table via the mounting reference surfaces 13F and 14F. This is not taught by Hessbruggen et al, wherein there is only a single workpiece chuck 54, i.e., the workpiece support is not comprised of first and second support heads. Additionally, the workpiece (belt P) in Watanabe et al is supported by rollers 11 and 14 which are spaced in the left-right direction in Figure 1A of Watanabe et al, and not arranged spaced in a first horizontal direction parallel to the axis of rotation of the workpiece. Accordingly, Watanabe et al could not provide a teaching for modifying Hessbruggen et al in accordance with the subject matter of Claims 3 and 15.

Applicants therefore believe that the present application is in a condition for allowance and respectfully solicit an early Notice of Allowability.

Respectfully submitted,

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